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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,762	12/23/2004	Hieu A. Lam	260280US6YAPCT	8443
22850	7590	09/25/2007		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER KACKAR, RAM N	
			ART UNIT	PAPER NUMBER
			1763	
			NOTIFICATION DATE	DELIVERY MODE
			09/25/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/517,762

Applicant(s)

LAM ET AL.

Examiner

Ram N. Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 37-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 37-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-3, 5-8, 10-11, 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosugi et al (US 6197116) in view of Collins et al (US 5888414).**

Makoto Kosugi disclose in situ monitoring of electrical parameters like impedance, phase, high frequency current and voltage (Abstract) while doing a plasma processing like etching on semiconductor substrates. Makoto Kasugi discloses model for predicting processing characteristics like etch rate which determines etch depth, etch endpoint and processed profile (Col 1 line 66- Col 2 line 2) a diagnostics unit to diagnose condition of plasma and find fault and alarm situations. The processing characteristics could be etch rate. (See all document and specially abstract, Col 1 lines 59- Col 2 line2, Col 3 lines 24-34, Col 6 lines 18-56, Col 7 lines 42-55).

Kosugi et al do not disclose magnetic system disposed around the process chamber.

Collins et al disclose a plasma reactor chamber having a controller (Fig 16-86) control the chamber including a magnetic field system around the system where the magnetic field could be stationary or rotatable (Col 1 line 65- Col 2 line 28) and or an inductively coupled RF energy for plasma density enhancement (Abstract). Collins et al disclose several RF power supplies, for example top electrode power supply (40) and lower electrode power supply (42) and teach that

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top (40 and Col 23 line 60 –Col 24 line1) or antenna source helps dense plasma and the lower helps bias to control ion energies (Col 13 lines 30-60). The frequency considerations are therefore different and therefore frequencies utilized could be different.

It is noted that the limitations related to the amendment relate to enhancements to plasma processing conditions like density and ion energies, which affect a plasma process.

However, the teaching of Kasuga et al are as pertinent to the system of Collins to take the advantage of precision in processing control and detection of abnormal conditions.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to apply the techniques learnt from Kosugi et al to apply to process conditions of Collins et al.

3. Claims 1-11 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al (US 5888414) in view of Tanaka et al (US 6616759).

Collins et al disclose a plasma reactor chamber having a controller (Fig 16-86) control the chamber including a magnetic field system around the system where the magnetic field could be stationary or rotatable (Col 1 line 65- Col 2 line 28) and or an inductively coupled RF energy for plasma density enhancement (Abstract). Collins et al disclose several RF power supplies, for example top electrode power supply (40) and lower electrode power supply (42) and teach that top (40 and Col 23 line 60 –Col 24 line1) or antenna source helps dense plasma and the lower helps bias to control ion energies (Col 13 lines 30-60). The frequency considerations are therefore different and therefore frequencies utilized could be different.

Collins et al do not teach process performance prediction model.

Tanaka et al disclose in situ monitoring of processing parameters like pressure, temperature, gas flow, impedance, current and voltage (Col 3 lines 52-60) while doing a plasma processing like etching on substrates of semiconductor. Tanaka et al disclose model for predicting processing characteristics, a diagnostics unit to find fault and alarm situations (Col 6 line 67 – Col 7 line 3). The processing characteristics could be etch rate which determines etch depth and the model is developed using Partial Least Square method (Col 4 line 29-Col 6 line61).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to apply the techniques learnt from Tanaka et al to apply to process conditions of Collins et al for advantage of precision in processing control and detection of abnormal conditions.

4. Claims 1-11 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al (US 5888414) in view of Sharad Saxena (US 5642296).

Collins et al disclose a plasma reactor chamber having a controller (Fig 16-86) control the chamber including a magnetic field system around the system where the magnetic field could be stationary or rotatable (Col 1 line 65- Col 2 line 28) and or an inductively coupled RF energy for plasma density enhancement (Abstract). Collins et al disclose several RF power supplies, for example top electrode power supply (40) and lower electrode power supply (42) and teach that top (40 and Col 23 line 60 –Col 24 line1) or antenna source helps dense plasma and the lower helps bias to control ion energies (Col 13 lines 30-60). The frequency considerations are therefore different and therefore frequencies utilized could be different.

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Collins et al do not teach process performance prediction model.

Sharad Saxena disclose in situ monitoring of processing parameters like power, pressure, gas flow (Abstract) while doing a plasma processing like etching on substrates of semiconductor. Sharad Saxena discloses model for predicting processing characteristics like etch rate (Fig 6), a diagnostics unit to diagnose condition of plasma and find fault and alarm situations (abstract and Col 3 line3 to Col 10 line 67).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to apply the techniques learnt from Sharad Saxena to apply to process conditions of Collins et al for advantage of precision in processing control and detection of abnormal conditions.

Response to Arguments

Applicant's arguments filed 8/15/2007 have been fully considered but they are moot in view of the new grounds of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ram Kackar
Primary Examiner AU 1763